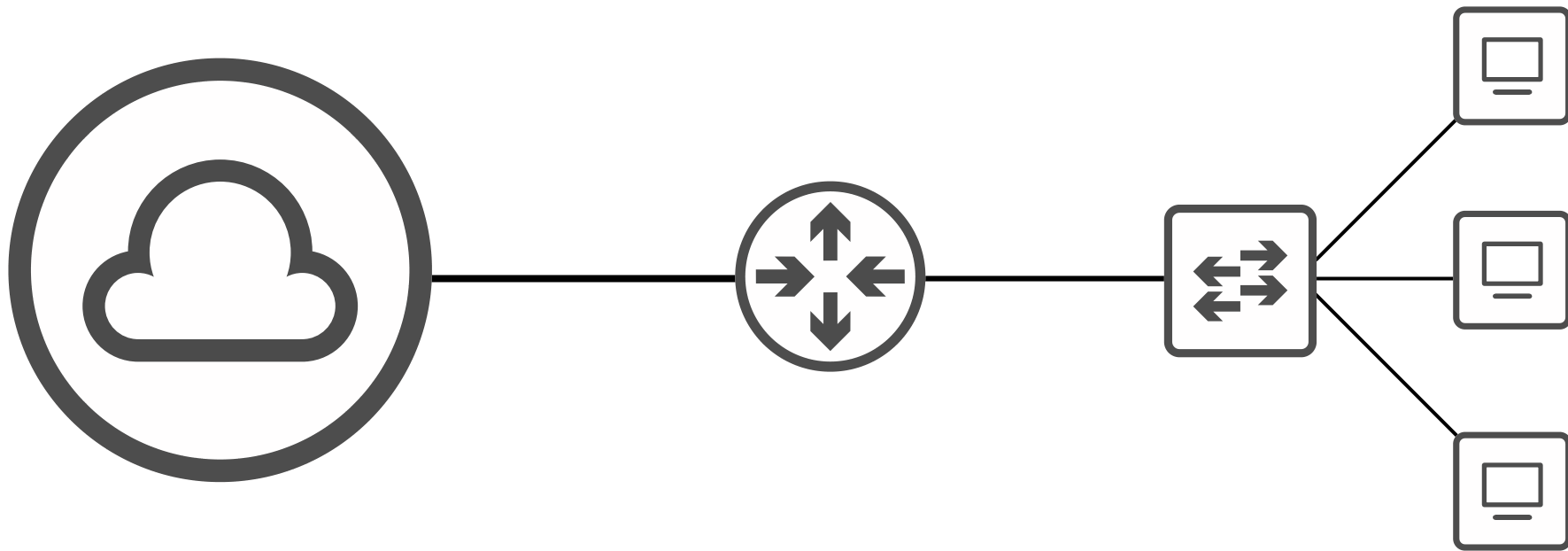




# CCNA 200-301 Day 4

## Introduction to the Cisco IOS CLI





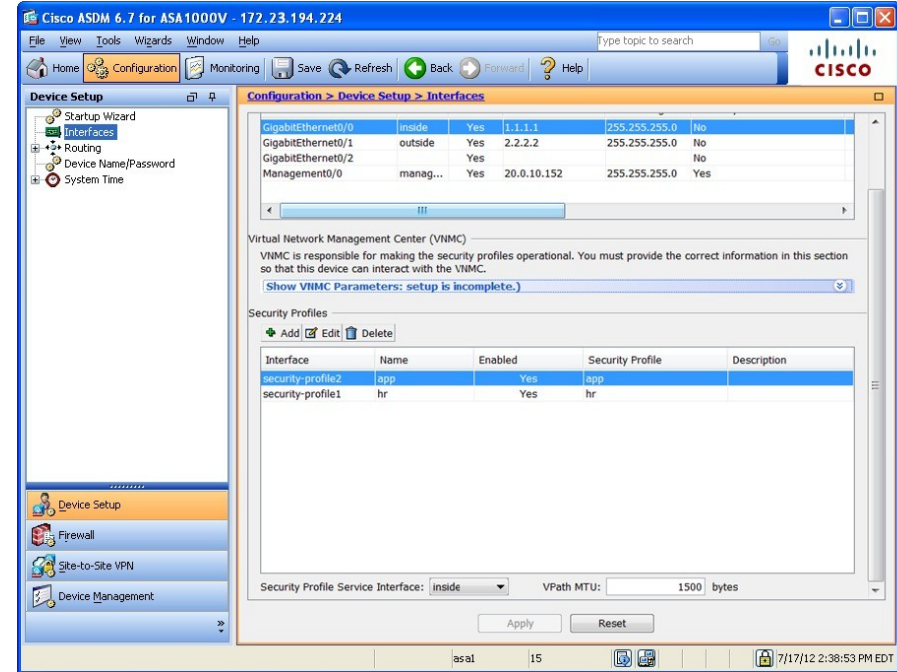
# What is a CLI?

- Command-line interface
- The interface you use to configure Cisco devices

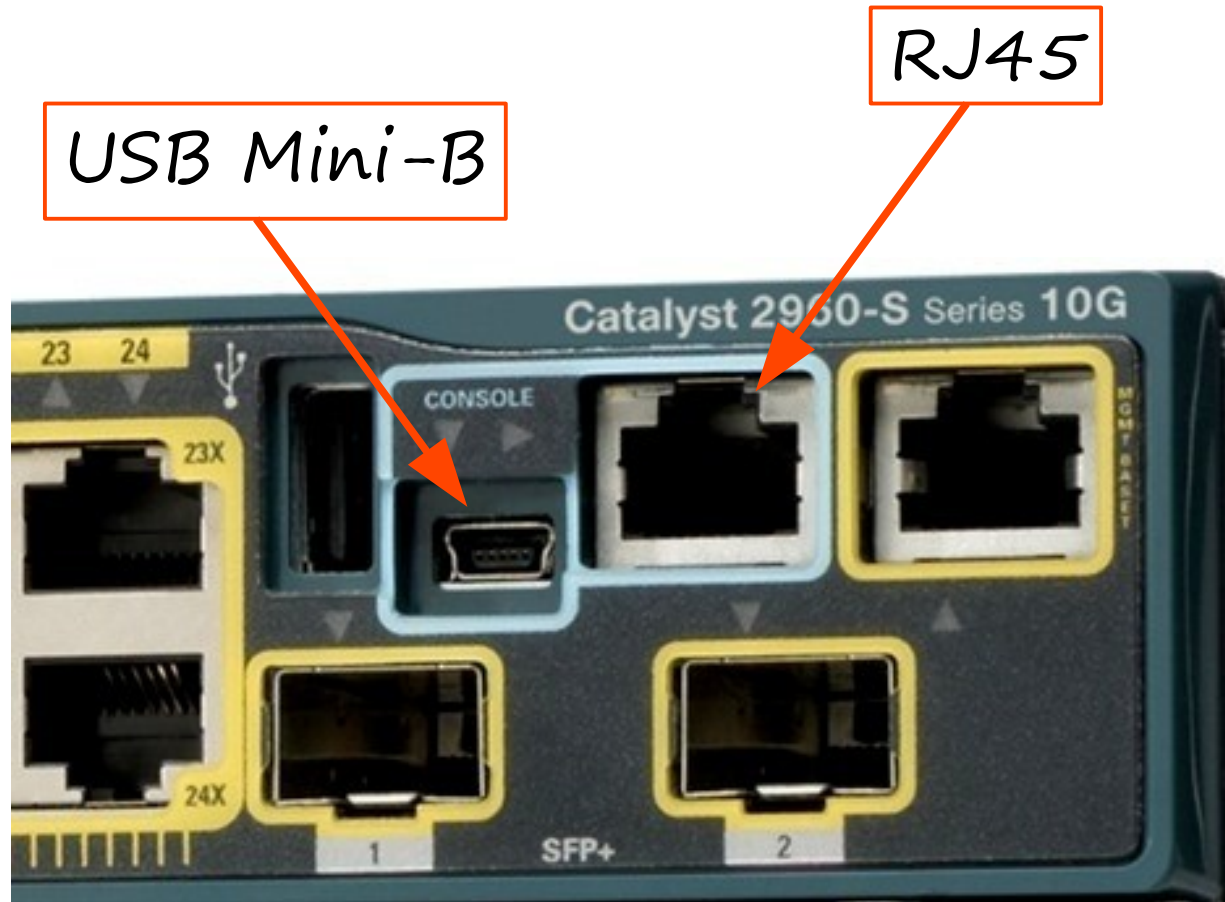
```
logging synchronous
stopbits 1
line aux 0
exec-timeout 0 0
privilege level 15
logging synchronous
stopbits 1
line vty 0 4
login
transport input all
!
!
end

R1(config)#int
R1(config)#interface gig
R1(config)#interface gigabitEthernet 0/0
R1(config-if)#no shutdown
R1(config-if)#
*Oct 27 00:35:00.987: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to up
*Oct 27 00:35:01.987: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
R1(config-if)#ip add
R1(config-if)#ip address 172.16.1.10 255.255.255.0
R1(config-if)#exit
R1(config)#
```

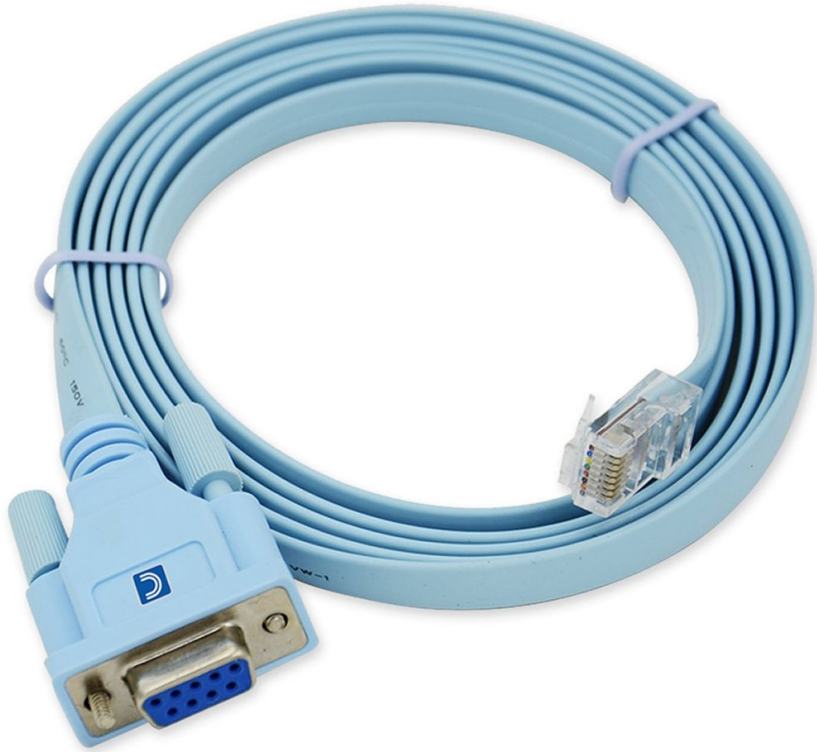
- GUI (Graphical User Interface)



# How to connect to a Cisco device? (Console port)

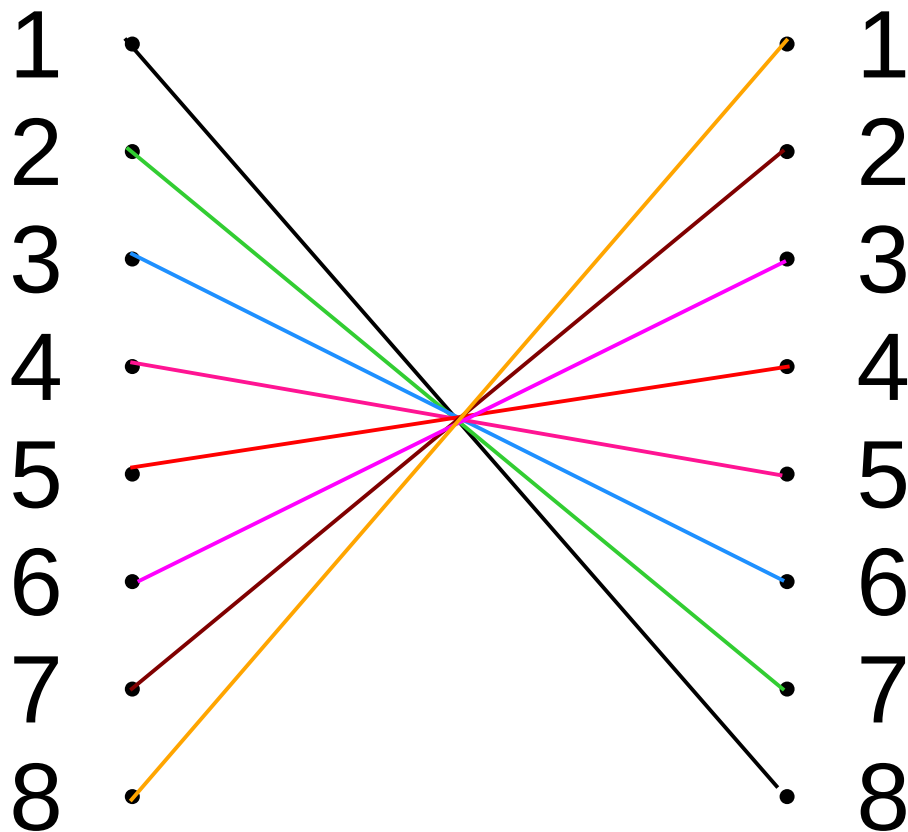
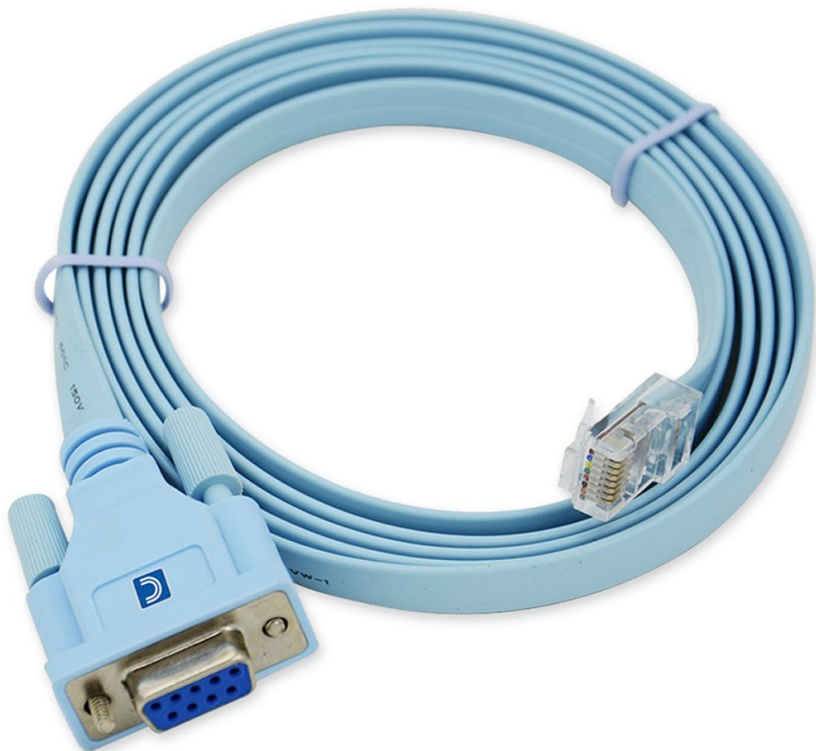


# How to connect to a Cisco device? (Console port)

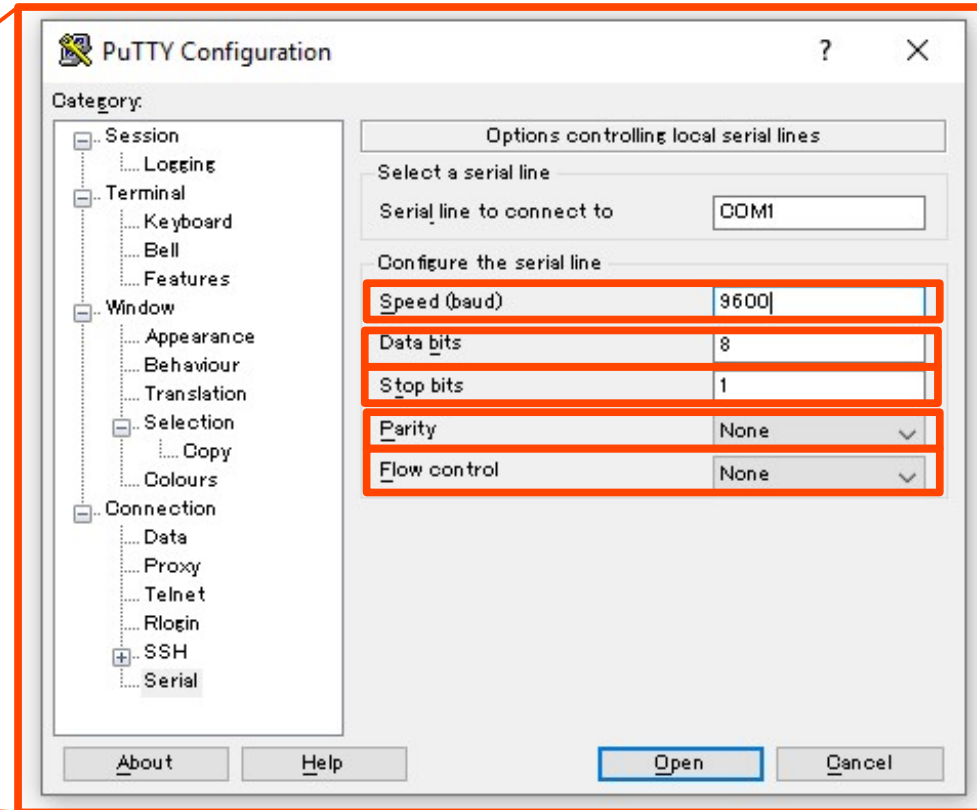
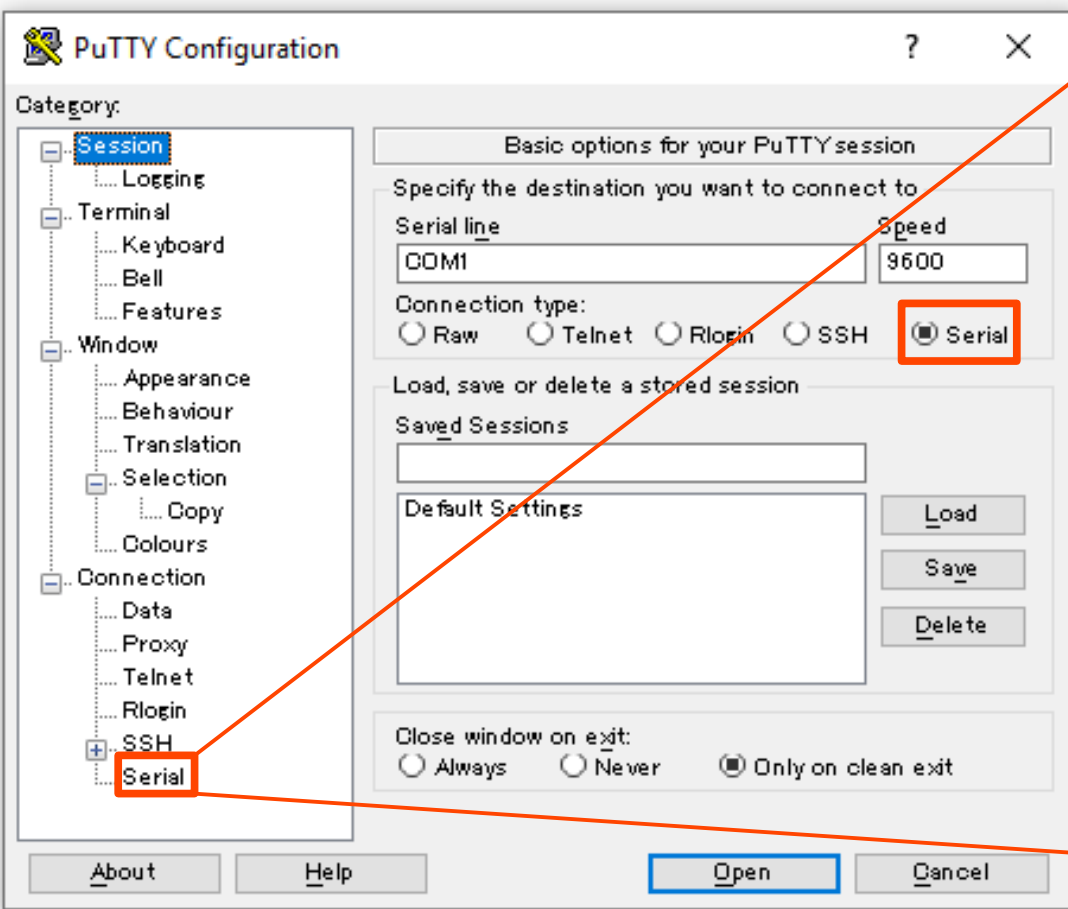


# How to connect to a Cisco device? (Console port)

## Rollover cable



# Terminal Emulator (PuTTY)



putty.org



# Cisco IOS CLI

Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:  
<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to [export@cisco.com](mailto:export@cisco.com).

Cisco CISCO2911/K9 (revision 1.0) with 491520K/32768K bytes of memory.  
Processor board ID FTX152400KS  
3 Gigabit Ethernet interfaces  
DRAM configuration is 64 bits wide with parity disabled.  
255K bytes of non-volatile configuration memory.  
249856K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>





# User EXEC Mode

```
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to comply with U.S. and local laws, return this product immediately.
```

```
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DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)
```

```
--- System Configuration Dialog ---
```

```
Would you like to enter the initial configuration dialog? [yes/no]: no
```

```
Press RETURN to get started!
```

```
Router>
```



=user EXEC mode

hostname of the device

- User EXEC mode is very limited.
- Users can look at some things, but can't make any changes to the configuration.
- Also called 'user mode'





# Privileged EXEC Mode

```
to comply with U.S. and local laws, return this product immediately.

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Processor board ID FTX152400KS
3 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>enable
Router#
```

```
Router>enable
Router#
```

=privileged EXEC mode

- Provides complete access to view the device's configuration, restart the device, etc.
- Cannot change the configuration, but can change the time on the device, save the configuration file, etc.



## User EXEC Mode

```
Router>?  
Exec commands:  
<1-99>      Session number to resume  
connect      Open a terminal connection  
disable      Turn off privileged commands  
disconnect   Disconnect an existing network connection  
enable       Turn on privileged commands  
exit         Exit from the EXEC  
logout       Exit from the EXEC  
ping         Send echo messages  
resume       Resume an active network connection  
show         Show running system information  
ssh          Open a secure shell client connection  
telnet       Open a telnet connection  
terminal     Set terminal line parameters  
traceroute   Trace route to destination  
Router>
```

## Privileged EXEC Mode

```
Router#?  
Exec commands:  
<1-99>      Session number to resume  
auto         Exec level Automation  
clear        Reset functions  
clock        Manage the system clock  
configure    Enter configuration mode  
connect      Open a terminal connection  
copy         Copy from one file to another  
debug        Debugging functions (see also 'undebug')  
delete       Delete a file  
dir          List files on a filesystem  
disable      Turn off privileged commands  
disconnect   Disconnect an existing network connection  
enable       Turn on privileged commands  
erase        Erase a filesystem  
exit         Exit from the EXEC  
logout       Exit from the EXEC  
mkdir        Create new directory  
more         Display the contents of a file  
no           Disable debugging informations  
ping         Send echo messages  
reload       Halt and perform a cold restart  
resume       Resume an active network connection  
rmdir        Remove existing directory  
send         Send a message to other tty lines  
setup        Run the SETUP command facility  
show         Show running system information  
ssh          Open a secure shell client connection  
telnet       Open a telnet connection  
terminal     Set terminal line parameters  
traceroute   Trace route to destination  
undebg       Disable debugging functions (see also 'debug')  
vlan         Configure VLAN parameters  
write        Write running configuration to memory, network, or terminal  
Router#
```

Use a question mark (?) to view  
the available commands



# Cisco IOS CLI

*I pressed Tab here*

```
Router>en
Router>enable
Router#
```

```
Router>en
Router>enable
Router#
```

```
Router>en
Router#
```

```
Router>en
Router#
```



# Cisco IOS CLI

```
Router>e
% Ambiguous command: "e"
Router>
```

```
Router>e
% Ambiguous command: "e"
Router>
```

```
Router>e
% Ambiguous command: "e"
Router>e?
enable  exit
Router>e
```

```
Router>e?
enable  exit
Router>e
```



# Global Configuration Mode

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
```

```
Router>enable
Router#con?
configure connect
Router#conf t?
terminal
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
```



# enable password

```
Router(config)#enable password?
```

```
password
```

```
Router(config)#enable password ?
```

```
7          Specifies a HIDDEN password will follow  
LINE      The UNENCRYPTED (cleartext) 'enable' password  
level     Set exec level password
```

```
Router(config)#enable password CCNA ?
```

```
<cr>
```

```
Router(config)#enable password CCNA
```

```
Router(config)#
```

- Passwords are case-sensitive.



# enable password

```
Router(config)#enable password CCNA
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#exit
```

Router con0 is now available

Press RETURN to get started.





# enable password

```
Router>enable
Password: 
Router#
```

- The password does *not* display as you type it (for security purposes).

```
Router>enable
Password:
Password:
Password:
% Bad secrets

Router>
```



# *enable password*

```
Router>enable
```

```
Router#configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#enable password CCNA
```

```
Router(config)#exit
```

```
Router#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#exit
```

```
Router>enable
```

```
Password:
```

```
Router#
```

# running-config / startup-config

- There are two separate configuration files kept on the device at once.
- **Running-config** = the current, active configuration file on the device. As you enter commands in the CLI, you edit the active configuration.
- **Startup-config** = the configuration file that will be loaded upon restart of the device.

# show running-config / show startup-config

```
Router#show running-config
```

```
Building configuration...
```

```
Current configuration : 714 bytes
```

```
!
```

```
version 15.1
```

```
no service timestamps log datetime msec
```

```
no service timestamps debug datetime msec
```

```
no service password-encryption
```

```
!
```

```
hostname Router
```

```
!
```

```
!
```

```
!
```

```
enable password CCNA
```

```
!
```

```
Router#show startup-config
```

```
startup-config is not present
```



# Saving the configuration

```
Router#write
```

```
Building configuration...
```

```
[OK]
```

```
Router#write memory
```

```
Building configuration...
```

```
[OK]
```

```
Router#copy running-config startup-config
```

```
Destination filename [startup-config]?
```

```
Building configuration...
```

```
[OK]
```

```
Router#
```



# *Saving the configuration*

```
Router#show startup-config
Using 714 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
enable password CCNA
!
!
!
```



# service password-encryption

```
Router#conf t
```

```
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
Router(config)#service password-encryption
```

```
Router#show running-config
```

```
Building configuration...
```

```
Current configuration : 719 bytes
```

```
!
```

```
version 15.1
```

```
no service timestamps log datetime msec
```

```
no service timestamps debug datetime msec
```

```
service password-encryption
```

```
!
```

```
hostname Router
```

```
!
```

```
!
```

```
!
```

```
enable password 7 08026F6028
```

```
!
```



Type 7 Password: 08026F6028

Crack Password

Plain text: CCNA



# enable secret

```
Router(config)#enable secret Cisco
```

```
Router(config)#do sh run
```

```
Building configuration...
```

```
Current configuration : 766 bytes
```

```
!
```

```
version 15.1
```

```
no service timestamps log datetime msec
```

```
no service timestamps debug datetime msec
```

```
service password-encryption
```

```
!
```

```
hostname Router
```

```
!
```

```
!
```

```
!
```

```
enable secret 5 $1$mERr$YlCkLMcTYWwkF1Ccndt1l.
```

```
enable password 7 08026F6028
```

5 = MD5 encryption

NOT used



# canceling commands

```
Router(config)#no service password-encryption
Router(config)#do sh run
Building configuration...

Current configuration : 769 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
enable secret 5 $1$mERr$YlCkLMcTYWwkF1Ccndt1l.
enable password 7 08026F6028
!
```



# service password-encryption

If you enable service password-encryption...

- current passwords will be encrypted.
- future passwords will be encrypted.
- the enable secret will not be effected.

If you disable service password-encryption...

- current passwords will not be decrypted.
- future passwords will not be encrypted.
- the enable secret will not be effected.

# Modes Review

Router> = *user EXEC mode*

Router# = *privileged EXEC mode*

Router(config)# = *global configuration mode*

Router>**enable**

*##used to enter privileged EXEC mode*

Router#**configure terminal**

*##used to enter global configuration mode*

Router(config)#**enable password** *password*

*##configures a password to protect privileged exec mode*

# Command Review

Router(config) #**service password-encryption**

*##encrypts the enable password (and other passwords)*

Router(config) #**enable secret** password

*##configures a more secure, always-encrypted enable password*

Router(config) #**do** privileged-exec-level-command

*##executes a privileged-exec level command from global configuration mode*



# Command Review

Router(config)#**no** command

*##removes the command*

Router#**show running-config**

*##displays the current, active configuration file*

Router#**show startup-config**

*##displays the saved configuration file which will be loaded if the device is restarted*

Router#**write**

*##saves the configuration*

Router#**write memory**

*##saves the configuration*

Router#**copy running-config startup-config**

*##saves the configuration*



# QUIZ

# Quiz Question 1

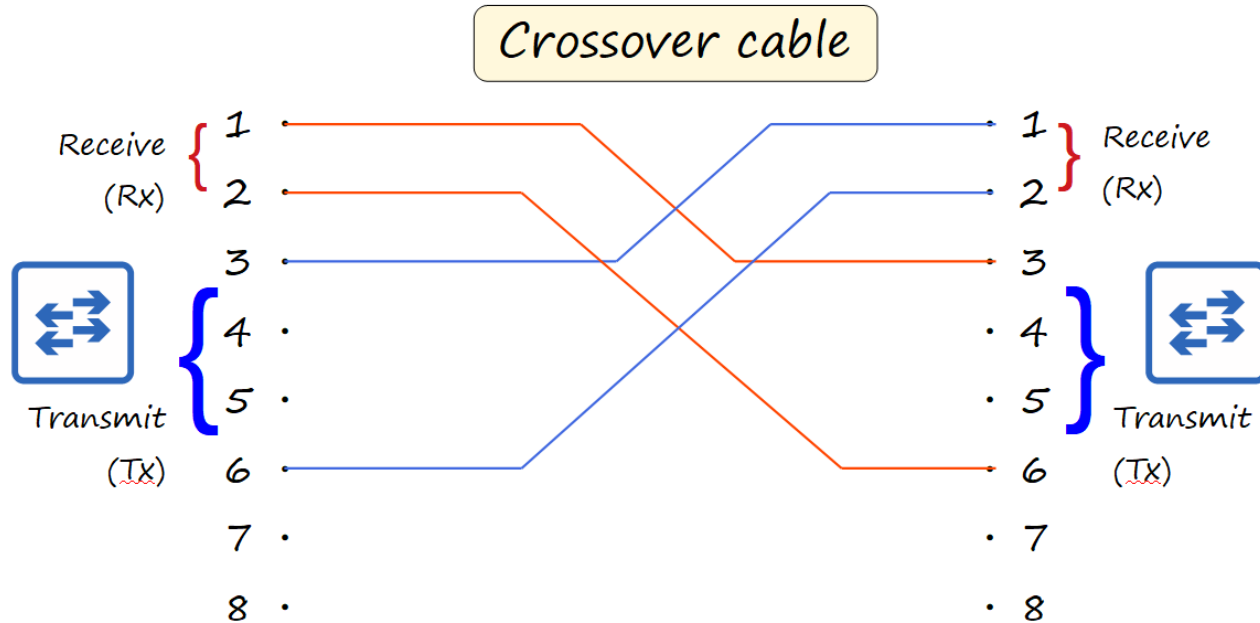
What kind of cable is used to connect to a Cisco device via the RJ45 console port?

- a) Rollover cable
- b) Crossover cable
- c) USB cable

# Quiz Question 1

## ~~X~~ Crossover cable

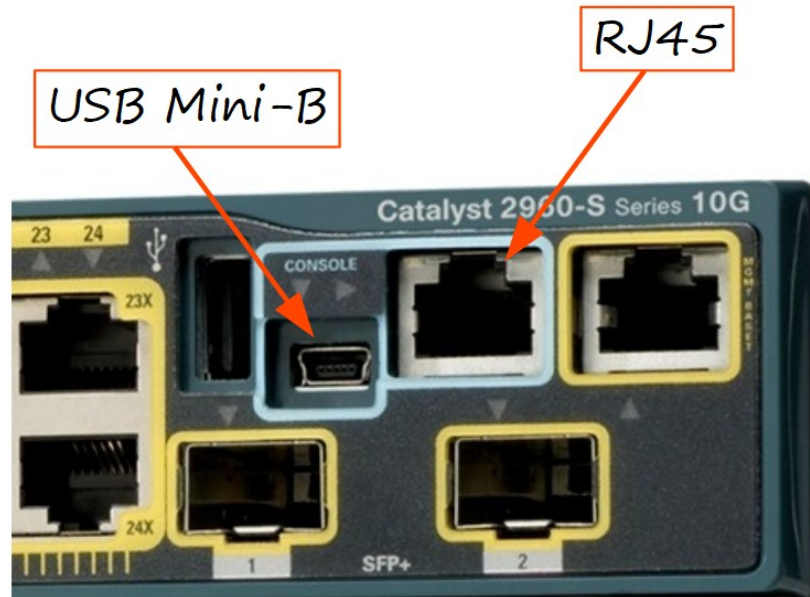
A crossover cable is used to connect two devices (switch-switch, router-router, router-PC, etc.) via Ethernet. It is not used to connect to a Cisco device via the RJ45 console port.



# Quiz Question 1

~~✗~~ USB cable

Although USB cables can be used to connect to the console of a Cisco device, the USB console port is separate from the RJ45 console port.

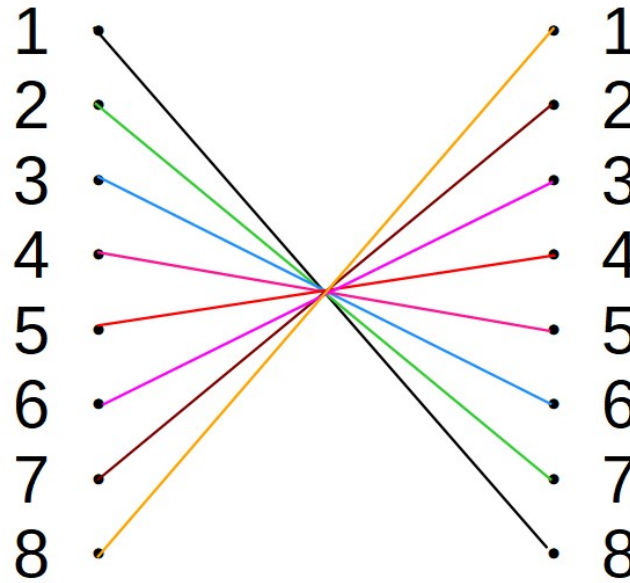


# Quiz Question 1

## ★ a) Rollover cable

A rollover cable is used to connect to the RJ45 console port on a Cisco device.

Rollover cable





## Quiz Question 2

You type *enable* to enter privileged exec mode on your Cisco router, however the password you enter is not accepted. What could be the problem?

- a) *service password-encryption* is enabled.
- b) *service password-encryption* is disabled.
- c) Caps Lock is on.

## Quiz Question 2

- ~~X~~) service password-encryption is enabled.
- ~~X~~) service password-encryption is disabled.

service password-encryption is irrelevant. It doesn't change the password itself, only how it is displayed in the configuration.

## Quiz Question 2

★ c) Caps Lock is on.

Passwords are case-sensitive, so if caps lock is on it could cause you to enter an incorrect password even if you think you're entering it correctly.

## Quiz Question 3

What is the most secure method to protect access to privileged EXEC mode?

- a) The `enable secret` command
- b) The `enable password` command
- c) The `enable password` command, with `service password-encryption`

## Quiz Question 3

~~X~~) The *enable password* command

The *enable password* command configures a plain-text password, which is not secure as it can be easily read.

## Quiz Question 3

~~X~~) The `enable password` command, with `service password-encryption`

Using `service password-encryption` encrypts the `enable password` to make it more secure, but it is a weak form of encryption.

## Quiz Question 3

★ a) The *enable secret* command

The *enable secret* command configures a password that is automatically encrypted. It uses MD5, a more secure form of encryption than the *service password-encryption* command.

## Quiz Question 4

If both the `enable password` and the `enable secret` command are configured, what will happen when you use `enable` to enter privileged EXEC mode?

- a) You must enter the `enable password`, followed by the `enable secret`.
- b) You must enter the `enable password` only.
- c) You must enter the `enable secret` only.



## Quiz Question 5

You enter the `conf t` command to enter global configuration mode. What is the full-length version of the command?

- a) configuration time
- b) configure terminal
- c) configuration terminal